Searching for Tensor Currents in the Weak Interaction Using ^{8}Li β Decay[1] M.T. BURKEY, G. SAVARD, University of Chicago, Argonne National Laboratory, R.E. SEGEL, Northwestern University, J.A. CLARK, Argonne National Laboratory, N.D. SCIELZO, A.T. GALLANT, K. KOLOS, S.W. PADGETT, B.S. WANG, Lawrence Livermore National Laboratory, T. HIRSH, Soreq NRC, Yavne 81800, Israel, E. HECKMAIER, University of California, Irvine, S.T. MARLEY, G. MORGAN, Louisiana State University, R. ORFORD, McGill University, K.S. SHARMA, University of Manitoba — The weak interaction is framed in the Standard Model with a pure vector-axial vector structure. A high-precision measurement of the $\beta-\nu$ correlation coefficient ($a_{\beta\nu}$) could reveal contributions from tensor or scalar currents and give insight into new physics. We utilize stopped ^{8}Li in the Beta decay Paul Trap (BPT) at Argonne National Lab to measure $a_{\beta\nu}$. The BPT is surrounded on 4 sides with double-sided silicon strip detectors backed by plastic scintillator detectors, which allow the kinematics of the ^{8}Li decay products to be over-constrained. A previous measurement done by our collaboration resulted in the first improvement in over 50 years to the tensor limit of $a_{\beta\nu}$ in a nuclear setting and was recently published in PRL. We have since upgraded our system and obtained over ten times our previous statistics. Our goal is to achieve a limit of $a_{\beta\nu}$ with an uncertainty of 0.001. Analysis is ongoing.

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